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In re Application of	
Application Number: 09/339,616	Filed: June 24, 1999
Art Unit	Examiner

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(12) **United States Patent**
Allen

(10) **Patent No.: US 6,461,019 B1**
(45) **Date of Patent: Oct. 8, 2002**

(54) **PREFERRED EMBODIMENT TO LED LIGHT STRING**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/819,736**

(22) Filed: **Mar. 29, 2001**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/378,631, filed on Aug. 20, 1999, now abandoned, which is a continuation-in-part of application No. 09/339,616, filed on Jun. 24, 1999, which is a continuation-in-part of application No. 09/141,914, filed on Aug. 28, 1999, now Pat. No. 6,072,280.

(60) Provisional application No. 60/119,804, filed on Feb. 12, 1999.

(51) **Int. Cl.**[7] **F21V 21/00**

(52) **U.S. Cl.** **362/249**; 362/226; 362/252; 362/800

(58) **Field of Search** 362/555, 800, 362/806, 568, 249, 252, 545, 226

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(57) **ABSTRACT**

An LED light string employs a plurality of LEDs wired in block series-parallel, where the one or more series blocks, each driven at the same input voltage as the source voltage (110 VAC or 220 VAC), are coupled in parallel. The LED light string interfaces to the source voltage using a common household plug; it may also include a corresponding common, household socket, coupled in electrical parallel, to enable multiple light strings to be connected to each other from end to end. In order to directly drive a network of diodes without current-limiting circuitry, the voltage of each series block of diodes must be matched to the input source voltage. This voltage matching requirement for direct AC drive places fundamental restrictions on the number of diodes on each diode series block, depending on the types of diodes used. For the voltage to be "matched," in each series block, the peak input voltage must be less than or equal to the sum of the maximum diode voltages for each series block.

3 Claims, 12 Drawing Sheets